Amendments to the Drawings:

A full set of replacement drawings is being provided herewith. Lines have been revised on all drawing sheets to connect drawing elements with reference numerals. The text in box 420 of FIG. 4 has been revised so that the word "authenticated" is on a single line. The text in boxes 430 and 440 of FIG. 4 have been revised to omit the hyphen in "de-crypted." The text in box 510 of FIG. 5 has been revised so that the word "encrypted" is on a single line. Link 630, which apparently was inadvertently omitted from FIG. 6b when the Sierra Patent Group filed this application, has been added.

REMARKS

Claims 1, 7-11, and 17-26 are pending in this application. Claims 3 and 13 have been withdrawn. Claims 2-6 and 12-16 are canceled. Claims 21-26 are newly added by this amendment. Claims 1, 7-11, and 14-20 stand rejected under 35 U.S.C. § 103 as allegedly obvious over what is characterized in the Office Action as "Applicant's admitted prior art" or "AAPA," in view of U.S. Patent Pub. No. 2005/0084076 ("Dhir").

These rejections and the associated assertions are all respectfully traversed. Reasons for this traversal include but are not limited to the arguments set forth herein and in prior responses. It is respectfully submitted that the independent claims previously presented were in condition for allowance without further amendment, at least in part because the art relied upon (as understood) does not teach, suggest or indicate a crypto communications module.

However, in order to expedite prosecution, all independent claims have been amended to yet more clearly distinguish the art relied upon. It is respectfully submitted that all claims are now in condition for allowance.

Claim 1 now reads as follows:

An apparatus for providing link layer security in a Physical Layer Transceiver (PHY) comprising:

analog circuitry configured to transmit to, and receive data from, a data transmission medium;

digital circuitry ~~directly~~ coupled to said analog circuitry, said digital circuitry configured to transmit data/control signals to, and receive data/control signals from, a Media Access Controller (MAC);

a PHY communications module coupled to said analog and digital circuitry;

a crypto engine coupled to said digital circuitry;

a crypto communications module ~~directly~~ coupled to said crypto engine, said crypto communications module configured to provide direct connectivity through a MDIO/MDC interface; and

an interface link operatively coupling said PHY communications module to said crypto communications module, wherein the crypto communications module is further configured to provide control signals to said PHY communications module via said interface link.

Support for these amendments may be found, for example, in Fig. 6e of the application as filed and the accompanying description. The language added is similar to that of original claim 6, which has been canceled by way of this amendment. In its explanation for rejecting claims 6 and 16, the Office Action contended that Dhir discloses "said crypto device controls the operation of said PHY":

> Dhir further discloses said crypto device controls the operation of said PHY (See Fig. 1, data has to go through numeral 112 (processing) where it is encrypted and then passed onto either PHY-1 or PHY-2 for transmitting it to the external source through signal line 106. Since data has to be processed by encryption engine before it gets to either PHY-1 or PHY-2, this can be seen as encryption engine controlling the operation of PHY, by processing the data before it gets to the PHY).

(Office Action at p. 5, ¶ 2.)

These statements are respectfully traversed. Passing data through a certain device does not give that device control over the passer. Control indicates more than simply passing data and awaiting the result. Control over a device may indicates such abilities as, e.g., querying the device status, requesting more data from the device, changing the devices modes of operation, starting/stopping the device or process, and the like. Dhir explicitly distinguishes between data and control signals in Fig. 1 by providing separate elements for each.

Accordingly, Dhir discloses no such control from a crypto device over a PHY. The passage above only indicates passing data to a processing device and awaiting the result. Regarding the processing device in Fig. 1, Dhir states that "MAC 110 is connected to a processing component 112" in paragraph [0028], and "The data to and from the MAC is processed by processing component 112" in paragraph [0029]. Dhir gives no indication that the processing device 112 may pass control signals to a PHY.

Dhir's Fig. 1 shows at least two intervening elements between the processing device 112 and either PHY-1 102 or PHY-2 104. Signals may travel from processing device 112 to MAC 110, from MAC 110 to MII 108, and from MII 108 to either PHY device. However, nowhere does Dhir's Fig. 1 or specification indicate that control signals may propagate through these two intervening devices from the processing device to a PHY. Such operation may not be assumed. For at least the foregoing reasons, it is respectfully submitted that claim 1 is allowable over the art relied upon.

Claim 11 now recites:

> 11. (Currently Amended) An apparatus for providing link layer security in a Physical Layer Transceiver (PHY) comprising:
>
> analog circuitry means for providing connectivity to a data transmission medium;
>
> digital circuitry means ~~directly~~ coupled to said analog circuitry means, said digital circuitry providing connectivity to a Media Access Controller (MAC);
>
> PHY communications means coupled to said analog and digital circuitry means, said PHY communications means configured to provide connectivity through an MDIO/MDC interface;
>
> crypto engine means coupled to said digital circuitry means and comprising both PHY logic and security logic;
>
> crypto communications means ~~directly~~ coupled to said crypto engine means, said crypto communications means coupled to said MDIO/MDC interface, wherein said MDIO/MDC interface is configured for controlling both the PHY and the crypto engine means; and
>
> an interface link means operatively coupling said PHY communications means to said crypto communications module.

Support for these amendments may be found, for example, in Fig. 6c of the application as filed and the accompanying description. The language added is similar to that of original claim 14, which has been canceled by way of this amendment.

In its explanation for rejecting claims 4 and 14, the Office Action contended:

> Regarding **Claims 4 and 14**, the rejection of claims 1 and 11 is incorporated and the combination of AAPA and Dhir further discloses PHY communication module is configured to provide connectivity through a MDIO/MDC interface (see AAPA, Fig. 1, Numeral 150 and MDIO interface connecting MAC and PHY communication module); and Dhir discloses crypto communication module (Dhir, Fig. 8, Numeral 312), directly coupled to MAC (see, Fig. 8, Numeral 320). Dhir's crypto communication module is not connected using a MDIO/MDC interface. However it can be seen that when Dhir's crypto engine and crypto communication are combined into AAPA design it would utilize the existing interface (MDIO/MDC) to receive and send control/data signal to and from MAC to do encryption or decryption of the data.

(Office Action at p. 4, last ¶.)

These statements are respectfully traversed. In particular, Dhir does not teach, suggest or indicate crypto engine means or crypto communication means as recited in the pending claims, including but not limited to claim 11, or as previously recited in canceled claim 4 or 14.

However, the additional recitations of amended claim 11 further distinguish the claimed elements from the art relied upon. As understood, the art relied upon does not teach, suggest or indicate "crypto engine means coupled to said digital circuitry means and comprising both PHY logic and security logic." As noted in the particular embodiment described with reference to FIG. 6c of the present application, "the PHY logic and the security logic may be configured to read separate areas of the PHY register memory space." (Present application at [0061].)

Moreover, the art relied upon does not teach, suggest or indicate "crypto communications means ~~directly~~ coupled to said crypto engine means, said crypto communications means coupled to said MDIO/MDC interface, wherein said MDIO/MDC interface is configured for controlling both the PHY and the crypto engine means." It is respectfully submitted that claim 11 is allowable over the art relied upon.

New claim 21 recites:

21. (New) An apparatus for providing link layer security in a Physical Layer Transceiver (PHY) comprising:

analog circuitry configured to transmit to, and receive data from, a data transmission medium;

digital circuitry coupled to said analog circuitry, said digital circuitry configured to transmit data/control signals to, and receive data/control signals from, a Media Access Controller (MAC);

a PHY communications module coupled to said analog and digital circuitry, said PHY communications module configured to provide connectivity through a MDIO/MDC interface;

a crypto engine coupled to said digital circuitry;

a crypto communications module coupled to said crypto engine; and

an interface link operatively coupling said PHY communications module to said crypto communications module, where said PHY controls the operation of said crypto device.

Support for these amendments may be found, for example, in Fig. 6a of the application as filed and the accompanying description. It is respectfully submitted that claim 21 is allowable over the art relied upon.

CONCLUSION

Applicants' attorney believes that all pending claims are allowable and respectfully requests a Notice of Allowance for this application from the Examiner. Should the Examiner believe that a telephone conference would expedite the prosecution of this application, the undersigned can be reached at the telephone number set out below.

The Commissioner is hereby authorized to charge any additional fees, including any extension fees, which may be required or credit any overpayment directly to the account of the undersigned, No. 504480 (Order No. CISCP584).

Respectfully submitted,
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